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Description of Invention

"Customer service system"

This invention relates to a customer service system and more particularly to a launderette system.

Customers experience many problems when using conventional coin-operated launderette equipment such as washing machines and tumble driers. These machines are often vandalised as each has a separate cash box and the coin mechanism of the machine is often damaged when an attempt is made to steal money from the cash box. It may not be immediately apparent that such a coin mechanism has been tampered with and this results in subsequent customers attempting to insert money into the machines which is then lost.

Furthermore, when the cost of specific services is increased, it is necessary to fit a new coin mechanism to each individual machine. This results in lost production time and often great expense to the proprietor.

The present invention aims to overcome, or at least mitigate, the above-mentioned disadvantages.

According to the present invention there is provided a customer service system comprising a plurality of customer service units individually usable by a customer upon payment of a corresponding fee, computing means connected to control the activation of

the customer to select a service unit for use by the customer and to indicate the selected unit to the computing means, and centralised payment means for accepting payment from a customer in respect of a selected service unit, the computing means being operable to activate the selected service unit in response to receipt of the corresponding fee by the centralised payment means.

Preferably the activation of each service unit is controlled by a relay switch actuated by the computing means in response to signals passed from the centralised payment means to the computing means.

Furthermore, a system embodying the present invention may comprise a plurality of time switches controlled by the computing means for controlling additional equipment.

Advantageously the centralised payment means comprises a coin slot, decoding means for translating signals produced by the action of depositing coins in the coin slot into instructions for the computing means and means for sorting the coins in the centralised payment means.

Preferably the service units are laundry machines.

In order that the invention may be readily understood, an embodiment thereof will now be described, by way of example, with reference to the accompanying drawings, in which:-

FIGURE 1 is a block diagram of a launderette system embodying the present invention;

FIGURE 2 is a circuit diagram of part of the system of Figure 1; and

FIGURE 3 is a flow chart illustrating the sequence of steps involved in processing data and coins input to the system by a customer.

With reference to Figure 1 of the accompanying drawings, a launderette system according to the present invention comprises a computer 1, which may be a conventional desk-top computer, and an interface unit 3. Computer 1 has a central processing unit and a memory and is located in a control room of the launderette which is accessible to a person controlling the system. The memory of the computer may be an internal memory of an external add-on unit.

A customer terminal 5 is provided at a centralised location in a part of the launderette accessible to the customers and, as shown in Figure 1, comprises a visual display screen or monitor 7 and a keypad 9. The keypad 9 has keys 11 representing the digits 0-9 and a number of other specialist function keys which allow a customer to convey commands to the computer 1. The keypad 9 of the terminal 5 communicates with the computer 1 through a keypad interface 10 and a computer bus interface 12 of the interface unit 3 and signals to be displayed on the visual display screen 7 are delivered to the monitor 7 at an output port 14 of the computer 1.

A keyboard 16 and monitor 17 are provided in the control room and enable a controller of the system to input instructions to the computer 1 via input port 19 and to view such instructions and other information on monitor 17 which receives corresponding signals at output port 20.

A printer 21 may be provided in the control room and connected to a corresponding output port 22 of the computer 1. The printer may be used to produce a copy of information displayed on the monitors 7 and 17 or stored in the memory of the computer.

A modem 23 may be connected to an input/output port 24 of the computer 1 to enable communication of information and instructions to and from a remote location where, for example, the launderette system is one system in a network of such systems.

An electronic coin mechanism 25 is provided at the centralised location in the part of the launderette accessible to the customers and has one or more coin slots (not shown). The coin mechanism 25 is adapted to accept coins of any valid denomination. Additional coin mechanisms, such as the second coin mechanism 26 shown in Figure 1, may be provided as a back-up in case the mechanism 25 becomes jammed, for example. The coin mechanisms 25 and 26 are connected to the computer 1 via a coin data bus 27 and a coin mechanism interface 28 in the interface unit 3.

The computer 1 is connected to one or more laundry units 29, such as washing machines, tumble driers and like equipment, via drivers 30 in the interface unit 3 and a machine control bus 31. Energisation of the laundry units 29 is controlled by respective relays 32 and the units 29 are divided into two distinct groups, namely those (such as washing machines) which have a set price and an internal timer and those (such as driers and the like) which will operate for a time proportional to the amount of money inserted into the coin mechanism.

As shown in Figure 2, signals from the keypad 9

are translated by a decoder 33 in the keypad interface 10 into signals in a form which may be read by the computer 1. These signals are transmitted along the data lines and address lines of the computer bus interface 12 to computer 1.

In the case of each laundry unit 29 which is of the first type described above having a set price and an internal timer, activation of the associated relay 32 by the computer 1 in response to signals carried by the data lines and address lines starts the internal timer of each laundry unit. With the second type of laundry unit 29, the duration of the activation is controlled by the computer 1 and continues for a time which is proportional to the amount of money inserted.

The use of the above system will now be described.

Upon entry to the launderette, a customer decides which of the numbered laundry machines he wishes to operate. The chosen machine is then loaded ready for use.

After loading the chosen laundry unit with laundry, the customer moves to the terminal 5 and, via the keypad 9, inputs the specific number assigned to the chosen machine in response to prompts displayed on the screen. Information entered via the keypad 11 by a customer is translated by the keypad decoder 33 in the keypad interface 10 and passed along the data and address lines in the computer bus interface to be acted upon by the computer 1. The customer is then instructed to insert coins to the value of or above the service required into the electronic coin mechanism. Coins of any current denomination are accepted, avoiding the

need for change machines which may be vandalised. The service required will not begin until coins of at least the value of the service have been inserted into the coin mechanism 25.

When coins are inserted into the coin mechanism, electronic signals are passed to the coin mechanism decoder 33, the signals being translated into information carried along the data and address lines of the computer bus interface 12 to the computer 1.

When coins to the amount of the desired service (or above) have been inserted, a signal is passed from the decoder 33 to the computer which instructs the activation of the relay 32 associated with the specific laundry unit 29 chosen by the customer. With laundry units of the first type described, the relay 32 remains activated for a desired period of time during which the internal timer of the laundry unit 29 operates. The length of time for which the relay 32 is activated may be changed by an authorised person controlling the system.

If coins above the value of the service required have been inserted, the customer is provided with a choice of actions. The excess money may be used immediately in order to purchase soap, a detergent of some kind to be used in the washing process or for a further service. Alternatively, the excess money may be stored for use against a subsequent service instructed later that day. If the excess money is to be stored for later use, the customer is invited to input a secret or code number of his/her own choosing which can be used as a customer reference number to store the excess money. On subsequent services used on that day, the customer can input, via the keypad 9, the customer number and the credit assigned to that number can be used.

Coins of the same value may be sorted by the electronic coin mechanism in order to facilitate easy collection from a safe into which coins inserted in the coin mechanism pass.

In the case where a laundry unit 29 is to be designated "out of order", for example if there is a fault in the laundry unit, an authorised person may instruct the computer via keyboard 16 to show the machine as "out of order". In this case, the relay 32 associated with the particular laundry unit 29 will not be activated and, consequently, the internal timer of the laundry unit 29 cannot be activated. Once the specific laundry unit 29 has been repaired, the computer may be instructed to allow that particular laundry unit to be selected by a customer by allowing activation of the relay 32 associated with the laundry unit.

It is possible for an authorised person (i.e. the owner or an employee) to instruct the system to display on monitor 17 or print on printer 21 a report of various services carried out, such as the number of services performed by each machine on that day, month or year or the number of customers at present using the system and the amount of customer credit to be assigned to services carried out later that day. This information will be accessible from the memory of the computer 1.

The system may also provide a number of time switches controlled by the computer to allow external equipment such as lights, doors, pumps or boilers etc. to be switched on or off automatically. The time switches may be set as required by an authorised person.

The system may further comprise a safe (not

illustrated) into which coins from the coin mechanisms 25, 26 are automatically fed.

Whilst the above system has been described with reference to a customer payment arrangement involving coin mechanisms, it will be appreciated that such coin mechanisms could be replaced by suitable mechanisms for accepting and verifying currency notes, or a mechanism for accepting, verifying and debiting an account relating to a credit or charge card.